FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	M05108A Large Acid Tank	Client:	Alaskan Copper Works
Date Received:	01/21/10	Project:	Acid Yard Testing, PO M05108, F&BI 001144
Date Extracted:	01/26/10	Lab ID:	001144-01 x10,000
Date Analyzed:	01/28/10	Data File:	001144-01 x10,000.048
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	101	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	12,700,000
Nickel	13,200,000
Copper	1,990,000
Zinc	51,800
Iron Screen	31,600,000

Analysis For Total Metals By EPA Method 200.8

Client ID:	M05108B Small Acid Tank	Client:	Alaskan Copper Works
Date Received:	01/21/10	Project:	Acid Yard Testing, PO M05108, F&BI 001144
Date Extracted:	01/26/10	Lab ID:	001144-02 x1000 and 001144-02 x10,000
Date Analyzed:	01/28/10	Data File:	001144-02 x10,000.049
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	97	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	4,930,000
Nickel	8,190,000
Copper	7,980,000
Zinc	26,800
Iron Screen	23,000,000

Analysis For Total Metals By EPA Method 200.8

Client ID:	M05108C Large Rinse Tank	Client:	Alaskan Copper Works
Date Received:	01/21/10	Project:	Acid Yard Testing, PO M05108, F&BI 001144
Date Extracted:	01/26/10	Lab ID:	001144-03 x1000 and 001144-03 x10,000
Date Analyzed:	01/28/10	Data File:	001144-03 x10,000.050
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	95	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	4,150,000
Nickel	3,990,000
Copper	711,000
Zinc	16,200
Iron Screen	10,900,000

Analysis For Total Metals By EPA Method 200.8

Client ID:	M05108D Small Rinse Tank	Client:	Alaskan Copper Works
Date Received:	01/21/10	Project:	Acid Yard Testing, PO M05108, F&BI 001144
Date Extracted:	01/26/10	Lab ID:	001144-04 x1000 and 001144-04 x10,000
Date Analyzed:	01/28/10	Data File:	001144-04 x10,000.047
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	93	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	1,100,000
Nickel	2,020,000
Copper	2,490,000
Zinc	8,560
Iron Screen	5,570,000

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	Acid Yard Testing, PO M05108, F&BI 001144
Date Extracted:	01/26/10	Lab ID:	I0-0046 mb
Date Analyzed:	01/28/10	Data File:	I0-0046 mb.022
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	90	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<1
Iron Screen	<250

Date of Report: 01/29/10
Date Received: 01/21/10
Project: Acid Yard Testing, PO M05108, F&BI 001144
Date Analyzed: 01/22/10

RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES FOR PERCENT ACID

Sample ID Laboratory ID	Percent Acid
M05108A Large Acid Tank 001144-01	8.51
M05108B Small Acid Tank 001144-02	8.25
M05108C Large Rinse Tank 001144-03	2.79
M05108D Small Rinse Tank 001144-04	1.78

Date of Report: 01/29/10
Date Received: 01/21/10
Project: Acid Yard Testing, PO M05108, F&BI 001144

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 001181-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Chromium	ug/L (ppb)	<1	<1	nm	0-20
Nickel	ug/L (ppb)	2.48	2.54	2	0-20
Copper	ug/L (ppb)	<1	<1	nm	0-20
Zinc	ug/L (ppb)	15.4	15.4	0	0-20

Laboratory Code: 001181-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Chromium	ug/L (ppb)	20	<1	98	50-150
Nickel	ug/L (ppb)	20	2.48	97	50-150
Copper	ug/L (ppb)	20	<1	96	50-150
Zinc	ug/L (ppb)	50	15.4	101 b	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	ug/L (ppb)	20	100	70-130
Nickel	ug/L (ppb)	20	100	70-130
Copper	ug/L (ppb)	20	101	70-130
Zinc	ug/L (ppb)	50	103	70-130

Date of Report: 01/29/10
Date Received: 01/21/10
Project: Acid Yard Testing, PO M05108, F&BI 001144

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES FOR PERCENT ACID

Laboratory Code: 001144-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Percent Acid	8.51	8.51	0	0-20

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

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Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

January 29, 2010

DUPLICATE

INVOICE #10ACU0129-1

Accounts Payable
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

RE: Project Acid Yard Testing, PO M05108, F&BI 001144 - Results of testing requested by Gerry Thompson for material submitted on January 21, 2010.

4 sample analyzed for Total Chromium, Copper, Nickel and Zinc by Method 200.8 @ $85 per sample	$	340.00
4 samples analyzed for Percent Acid Content @ $75 per sample		300.00
4 samples analyzed for Total Iron by Method 200.8 @ $40 per sample		160.00
Rush Charges (5 day) 50% of $800.00		400.00
Amount Due	$	1,200.00

FEDERAL TAX ID # (b) (6)

001144 1

SAMPLE CHAIN OF CUSTODY ME 01/21/10

AI4

AKC-0005127

Send Report To Gerald Thompson

Company ALASKAN Copper Works

Address 628 S. Hanford St

City, State, ZIP Seattle WA 98134

Phone # 206-571-6033 Fax # 206-382-4309

SAMPLERS (signature)

PROJECT NAME/NO. Acidyard Testing

PO # M05108

REMARKS

Page # ____ of ____

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☒ RUSH 1 wk

Rush charges authorized by:

SAMPLE DISPOSAL
- ☒ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	% of HNO3	Cu Cu NE	Zn Fe			Notes
M05108A	01	1/21/10	1:45pm	HNO3	1							X	X	X			
Large Acid Tank																	
M05108B																	
Small Acid Tank	02	1/21/10	1:45pm	HNO3	1							X	X	X			
M05108C	03	1/21/10	1:45pm	HNO3	1							X	X	X			
LARGE Rinse tank																	
M05108D	04	1/21/10	1:45pm	HNO3	1							X	X	X			
Small Rinse Tank																	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gerald Thompson	ACW	1/21/10	2:26pm
Received by:	Nhan Phan	FeBE	1/21/10	2:26
Relinquished by:				
Received by:				

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FORMS\COC\COC.DOC

Samples received at 25 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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January 29, 2010

Gerry Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on January 21, 2010 from the Acid Yard Testing, PO M05108, F&BI 001144 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ACU0129R.DOC